



ICAO

UNITING AVIATION

Effects of Novel Coronavirus (COVID-19) on Civil Aviation: Economic Impact Analysis

Montréal, Canada

23 March 2020





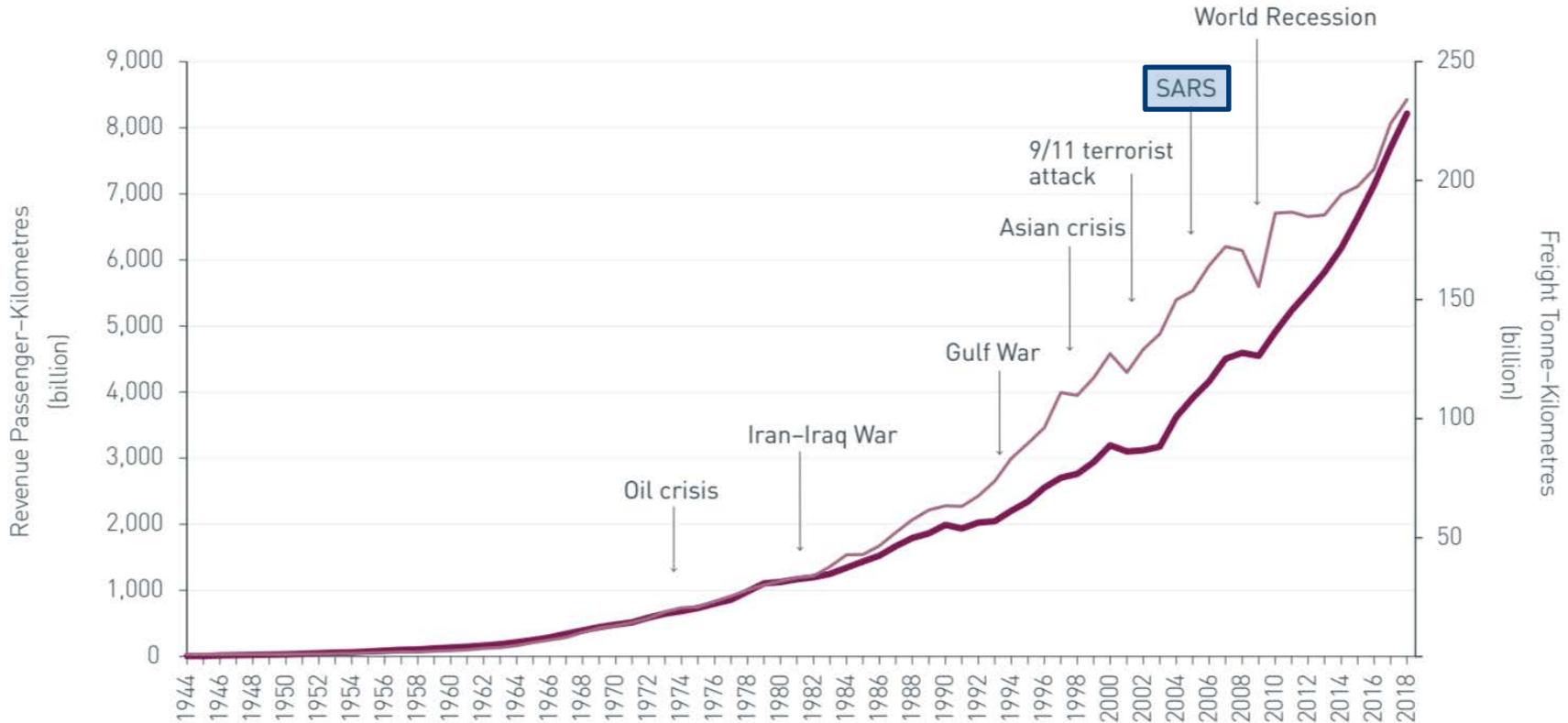
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Introduction and Background

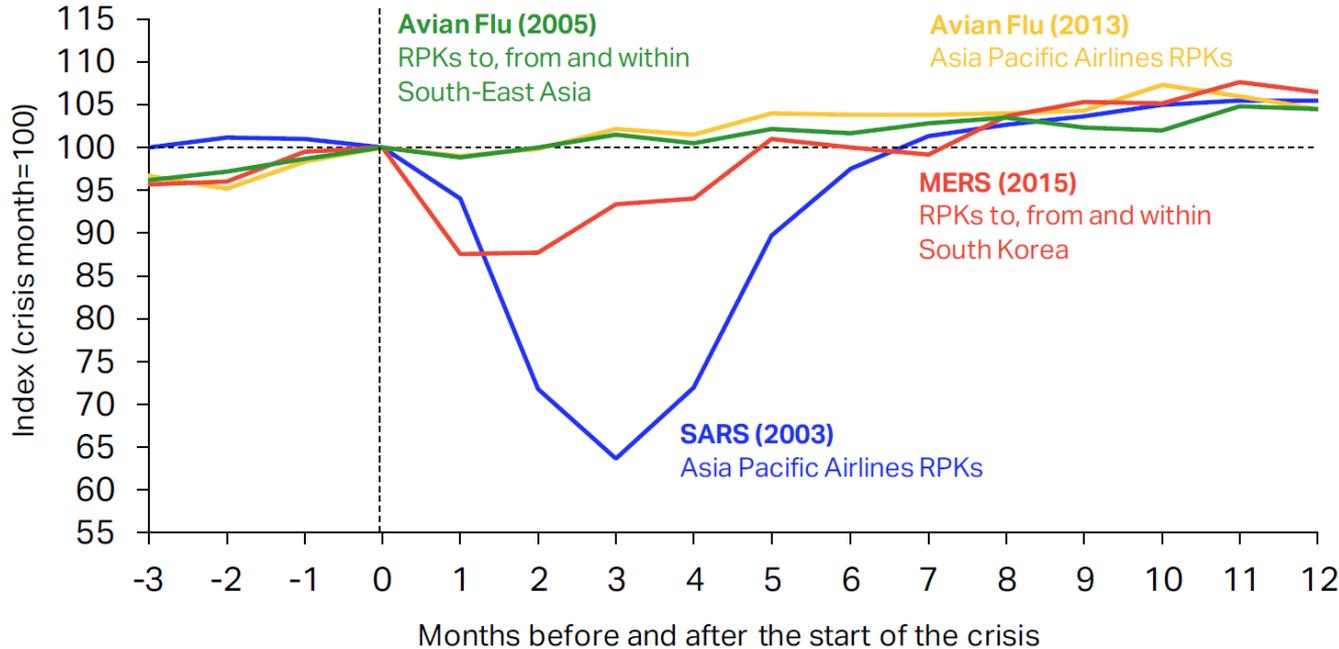


Air traffic has been vulnerable to external factors including disease outbreaks



What can we learn from past experience? SARS, Aviation flu and MERS

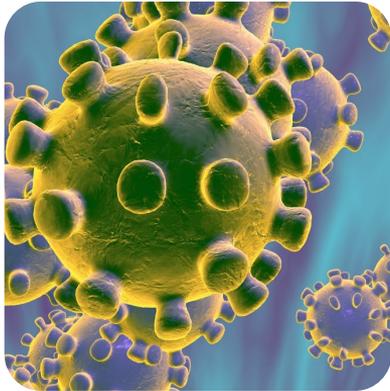
Impact of past outbreaks on aviation



History shows that SARS has the most serious impact on traffic. At the height of the outbreak (May 2003), monthly RPKs of Asia-Pacific airlines were 35% lower than their pre-crisis levels. Overall in 2003, Asia-Pacific airlines lost **8% of annual RPKs** and **\$6 billion of revenues**.

Source: IATA Economics

Disease outbreak directly impacts air traffic and revenues of aviation industry



Number of cases / countries affected

- Flights cancellations
- Aircraft groundings
- Travel bans
- Border closures

Traffic decline

- Fewer flights
- Lower load factors
- Impact on yield

Revenue loss

- Proportionate to traffic loss
- Decline in unit revenues, especially in non-aeronautical (airports)



COVID-19 outbreak has impacted air traffic for China starting from January 2020



Note: The above includes a) international from mainland China, Hong Kong SAR of China, Macao SAR of China, Taiwan, Province of China; b) domestic within mainland China, and c) regional between mainland China and Hong Kong SAR, Macao SAR and Taiwan Province

A surge of COVID-19 confirmed cases occurred in several States by late February 2020

February 2020 International passenger seat capacity

Country/Territory	Capacity change from originally-planned	
China	- 10,532,200	-61%
Hong Kong SAR of China (CN)	- 2,363,300	-36%
Republic of Korea	- 1,717,100	-19%
Japan	- 1,592,400	-15%
Thailand	- 1,452,500	-15%
Taiwan, Province of China (CN)	- 1,446,700	-23%
Singapore	- 807,600	-12%
Viet Nam	- 731,900	-16%
Macao SAR of China (CN)	- 721,500	-64%
Philippines	- 646,100	-18%
United States	- 620,300	-3%
Malaysia	- 448,200	-8%
Indonesia	- 426,100	-10%
Russian Federation	- 317,900	-5%
Cambodia	- 277,900	-21%
Turkey	- 277,800	-4%
Italy	- 268,800	-3%
United Arab Emirates	- 252,900	-2%
Australia	- 241,300	-5%
United Kingdom	- 188,900	-1%
Iran Islamic Republic of	- 169,800	-18%
France	- 158,000	-1%
Myanmar	- 147,500	-21%
Germany	- 145,600	-1%
India	- 116,800	-2%
Morocco	- 108,200	-5%
Qatar	- 99,300	-2%
Canada	- 96,200	-1%
Lao People's Democratic Republic	- 71,900	-21%
Finland	- 71,400	-4%
World total	- 27,747,600	-8%

February 2020 excluding from/to China, Iran, Italy and Korea

Country/Territory	Capacity change from originally-planned	
Turkey	- 198,068	-3%
Singapore	- 167,046	-3%
Russian Federation	- 163,237	-3%
Malaysia	- 121,931	-3%
Indonesia	- 116,273	-3%
Morocco	- 85,922	-4%
United Kingdom	- 83,417	0%
France	- 68,186	-1%
Iraq	- 67,359	-9%
Thailand	- 64,123	-1%
Viet Nam	- 60,708	-3%
United States	- 52,419	0%
Lebanon	- 51,639	-7%
Libya	- 50,977	-27%
Qatar	- 39,735	-1%
Tunisia	- 35,473	-5%
Saudi Arabia	- 30,901	-1%
Czechia	- 28,105	-2%
Puerto Rico (US)	- 26,854	-2%
Cambodia	- 26,018	-4%
Finland	- 23,399	-1%
Jordan	- 22,697	-3%
South Africa	- 21,734	-2%
Romania	- 20,729	-1%
Denmark	- 19,692	-1%
Algeria	- 19,020	-2%
Israel	- 18,776	-1%
Greece	- 16,930	-1%
Poland	- 16,860	-1%
Uzbekistan	- 16,113	-4%
World total	- 1,758,542	-1%

In February 2020, international passenger capacity reduced by 8%, mainly related to traffic from/to States experiencing an early outbreak

- State/Territory with 100 or more confirmed cases*
- State/Territory with 1,000 or more confirmed cases*
- State/Territory with 10,000 or more confirmed cases*

*: Coronavirus Disease 2019 (COVID-19) Situation Report by WHO (29 February 2020)



COVID-19 Pandemic was declared and accelerating in March 2020

March 2020 International passenger seat capacity

Country/Territory	Capacity change from originally-planned
China	- 14,475,500 -79%
Italy	- 6,689,500 -59%
Republic of Korea	- 6,415,100 -69%
Hong Kong SAR of China (CN)	- 5,134,300 -74%
Japan	- 5,052,500 -45%
Thailand	- 3,784,500 -38%
Taiwan, Province of China (CN)	- 3,744,400 -54%
Germany	- 2,934,400 -16%
Singapore	- 2,347,200 -32%
United States	- 2,184,900 -8%
Viet Nam	- 2,178,600 -46%
United Arab Emirates	- 1,821,200 -14%
United Kingdom	- 1,687,600 -7%
Malaysia	- 1,679,600 -28%
Turkey	- 1,503,300 -19%
France	- 1,453,000 -11%
Philippines	- 1,326,000 -36%
Saudi Arabia	- 1,325,200 -23%
Spain	- 1,157,400 -8%
India	- 1,008,700 -14%
Indonesia	- 989,900 -23%
Macao SAR of China (CN)	- 919,400 -77%
Switzerland	- 816,500 -14%
Israel	- 763,900 -34%
Austria	- 582,300 -15%
Australia	- 579,600 -13%
Iran Islamic Republic of	- 536,600 -53%
Belgium	- 519,000 -15%
Qatar	- 517,300 -11%
Russian Federation	- 467,500 -8%
World total	- 84,259,600 -22%

March 2020 excluding from/to China, Iran, Italy and Korea

Country/Territory	Capacity change from originally-planned
Germany	- 1,955,429 -11%
Saudi Arabia	- 1,303,226 -23%
Singapore	- 1,243,194 -21%
United Arab Emirates	- 1,193,185 -10%
Thailand	- 1,183,063 -19%
Turkey	- 1,014,853 -14%
United Kingdom	- 947,093 -5%
France	- 848,278 -7%
United States	- 831,779 -4%
Malaysia	- 829,067 -18%
India	- 740,271 -11%
Switzerland	- 665,891 -12%
Israel	- 615,961 -30%
Indonesia	- 591,437 -16%
Spain	- 571,114 -4%
Japan	- 530,996 -12%
Austria	- 439,987 -12%
Viet Nam	- 437,389 -19%
Kuwait	- 434,701 -23%
Iraq	- 315,701 -37%
Belgium	- 298,866 -10%
Egypt	- 293,603 -11%
Sweden	- 282,410 -9%
Denmark	- 279,838 -9%
Czechia	- 270,966 -18%
Qatar	- 263,775 -6%
Bahrain	- 263,420 -23%
Morocco	- 240,183 -11%
Netherlands	- 235,611 -3%
Lebanon	- 215,511 -27%
World total	- 23,109,304 -8%

In March 2020, international passenger capacity so far reduced by 22%, with significant reduction not only in States experiencing an early outbreak but also at the global scale. Air traffic reduction no longer limited to initial outbreak countries



*: Coronavirus Disease 2019 (COVID-19) Situation Report by WHO (19 March 2020)



Summary of Analysis Results



Estimated impact of COVID-19 outbreak on scheduled **international passenger** traffic during **1Q 2020** compared to originally-planned:

- **China (including Hong Kong/Macao SARs and Taiwan Province):** 40% seat capacity reduction, 30.8 to 32.6 million passenger reduction, USD 6.9 to 7.3 billion loss of gross operating revenues of airlines
- **Republic of Korea:** 29% seat capacity reduction, 7.8 to 8.6 million passenger reduction, USD 1.5 to 1.7 billion loss of gross operating revenues of airlines
- **Italy:** 23% seat capacity reduction, 6.7 to 7.1 million passenger reduction, USD 0.8 to 0.9 billion loss of gross operating revenues of airlines
- **Iran (Islamic Republic of):** 25% seat capacity reduction, 730,000 to 810,000 passenger reduction, USD 120 to 130 million loss of gross operating revenues of airlines

* *Coronavirus Disease 2019 (COVID-19) Situation Report by WHO as of 15 March 2020*



Scenario Analysis: Mainland China

This is a preliminary analysis. Figures and estimates herein will be updated with the situation evolving and more information available.



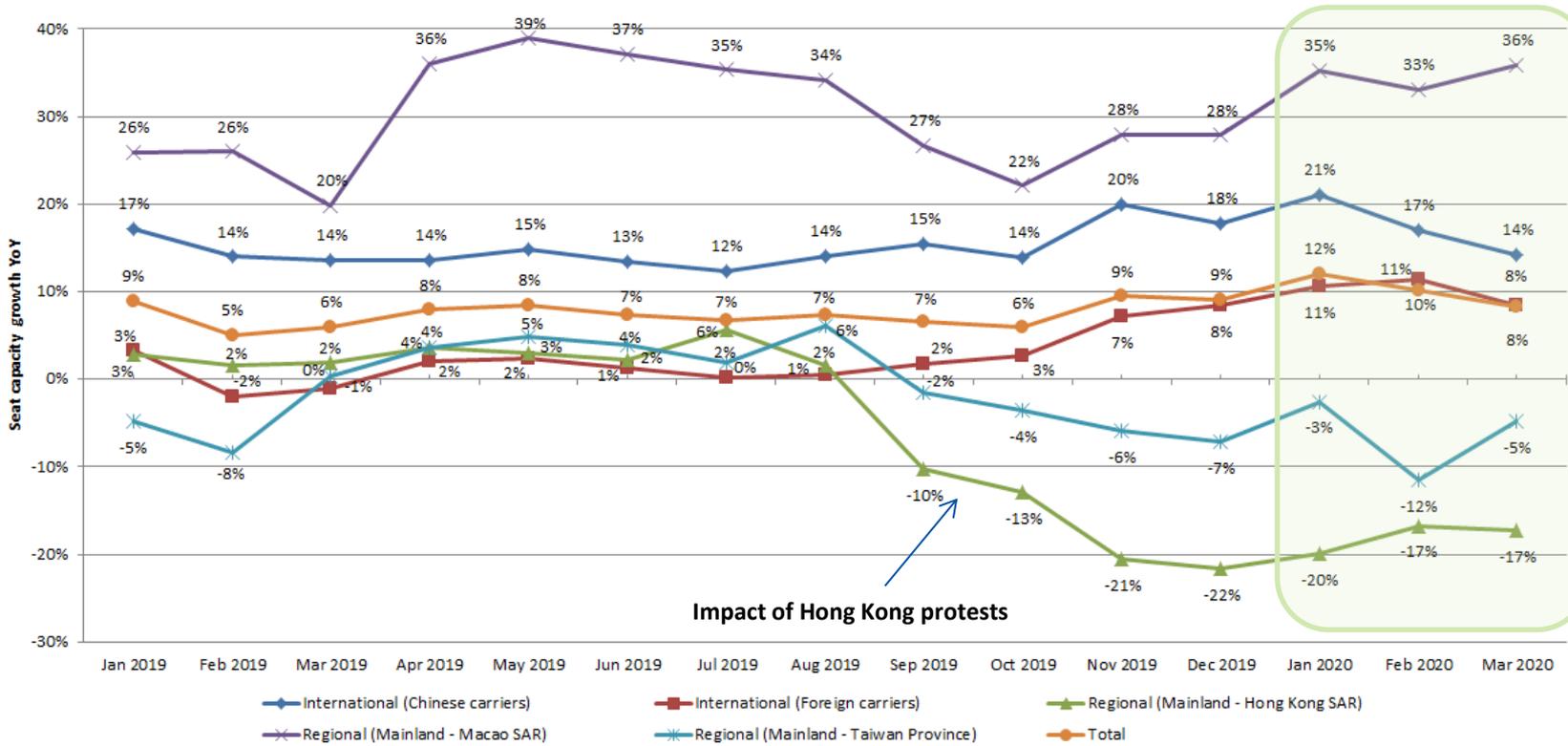
- **“International”** refers to scheduled international passenger services from/to mainland China excluding:
 - scheduled passenger services between mainland China and Hong Kong Special Administrative Region (SAR) of China, Macao SAR of China and Taiwan, Province of China; and
 - scheduled international passenger services from/to Hong Kong SAR, Macao SAR of China and Taiwan, Province of China
- **“Regional”** refers to scheduled passenger services:
 - between mainland China and Hong Kong SAR of China
 - between mainland China and Macao SAR of China; and
 - between mainland China and Taiwan, Province of China



- **Baseline (hypothetical situation without COVID-19 outbreak)**
 - Seat capacity: used "originally-planned" winter schedule
 - Load factor: applied 78% for Chinese carriers, 80% for foreign carriers and 87% for LCCs (both Chinese and foreign)
- **Scenario 1 (mild)**
 - Seat capacity: estimated by airlines' schedule changes
 - Load factor: applied the same % as baseline in January; 15 and 12 percentage points lower than baseline in February and March, respectively (30 and 25 percentage points lower for "Regional"; 15 percentage points lower in March for Korea, Iran and Italy)
- **Scenario 2 (severe)**
 - Seat capacity: estimated by airlines' schedule changes
 - Load factor: applied the same % as baseline in January, 25 and 22 percentage points lower than baseline in February and March, respectively (40 and 33 percentage points lower for "Regional"; 25 percentage points lower in March for Korea, Iran and Italy)



10% seat capacity increase compared to 1Q 2019

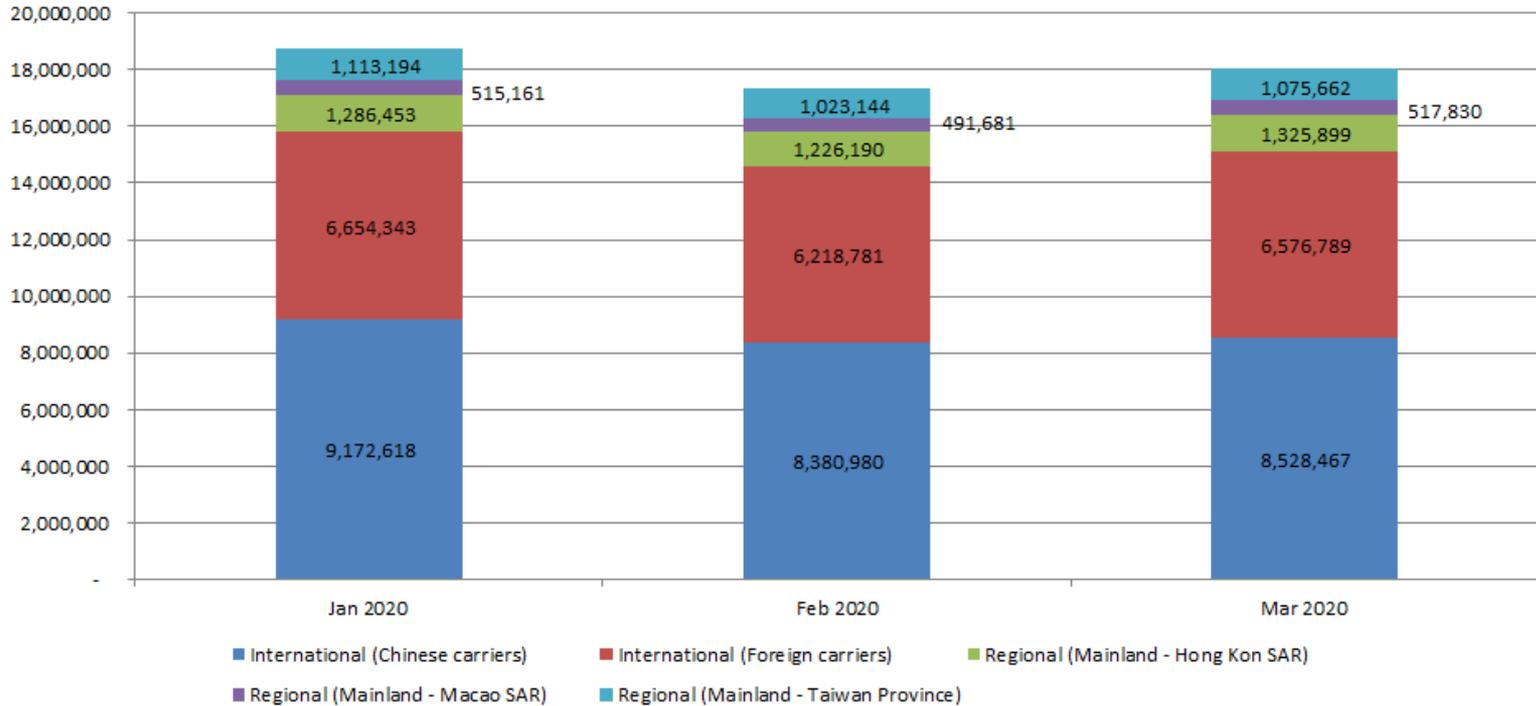


A total of YoY 10% seat capacity increase originally - planned for 1Q 2020 despite the reduction of capacity between mainland China and Hong Kong SAR and Taiwan Province

Impact of Hong Kong protests



Number of seats offered by airlines (1Q 2020 originally-planned)

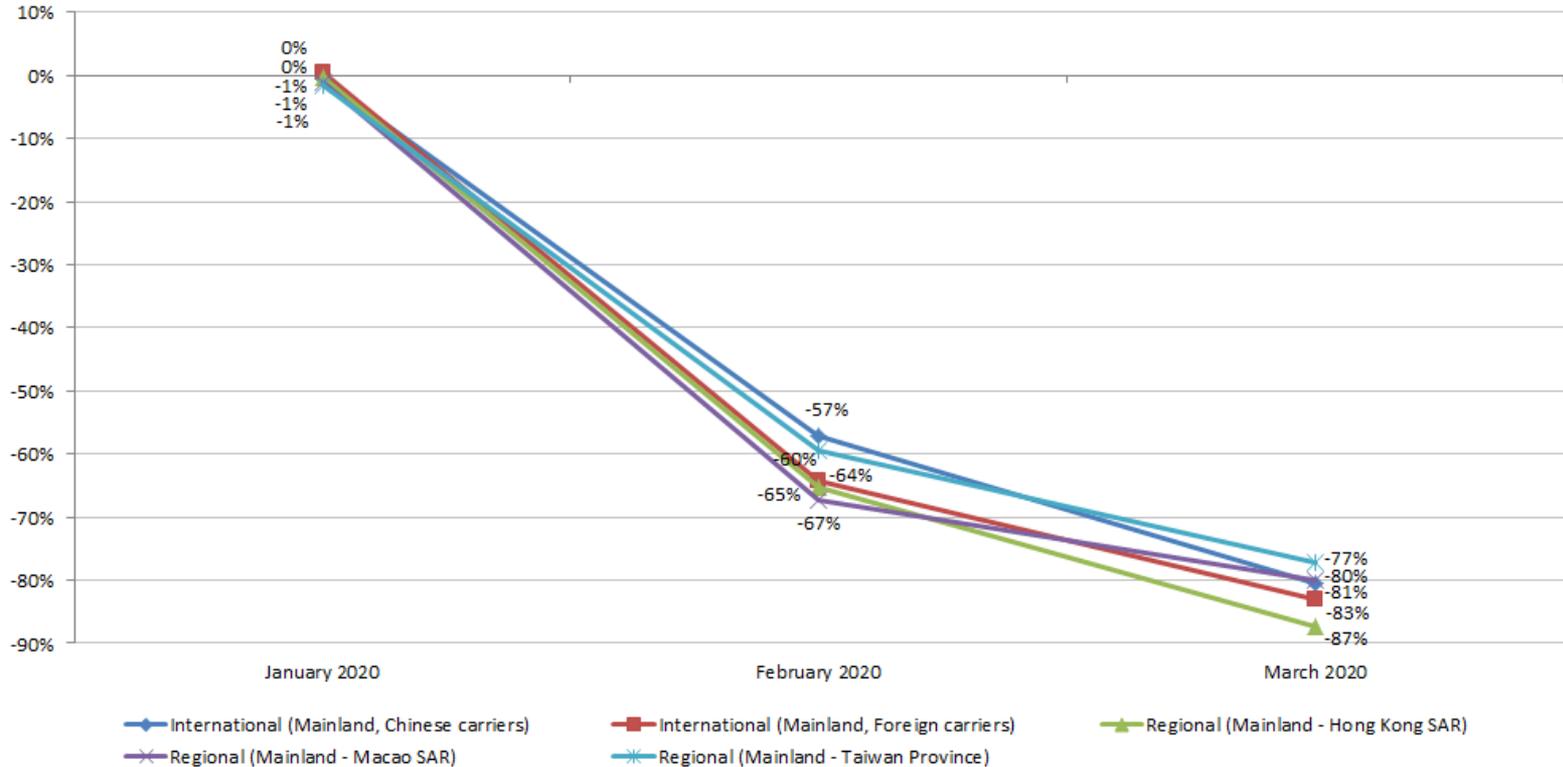


Capacity share 1Q 2020

- 48%: International by Chinese carriers
- 36%: International by foreign carriers
- 7% Mainland China - Hong Kong SAR
- 3% Mainland China - Macao SAR
- 6% Mainland China - Taiwan Province



Scenarios 1 & 2: 47% seat capacity reduction from Baseline

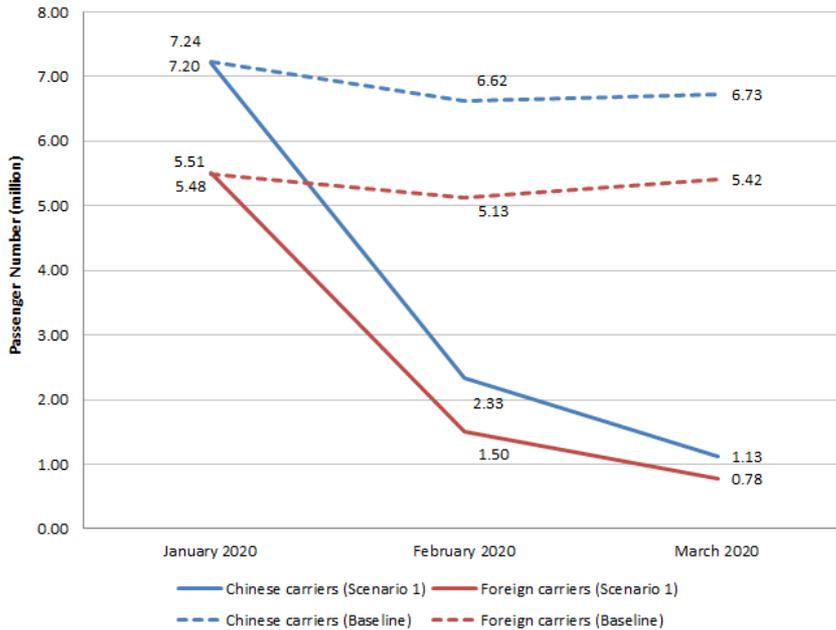




18.2 to 19.0 million “international” passenger reduction in 1Q 2020 compared to Baseline

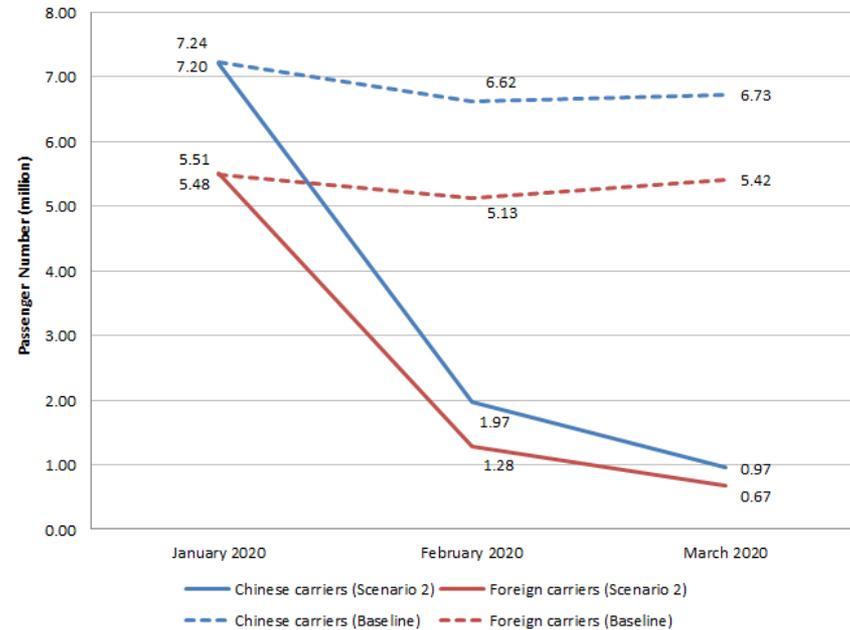
Scenario 1

18.2 million passenger reduction



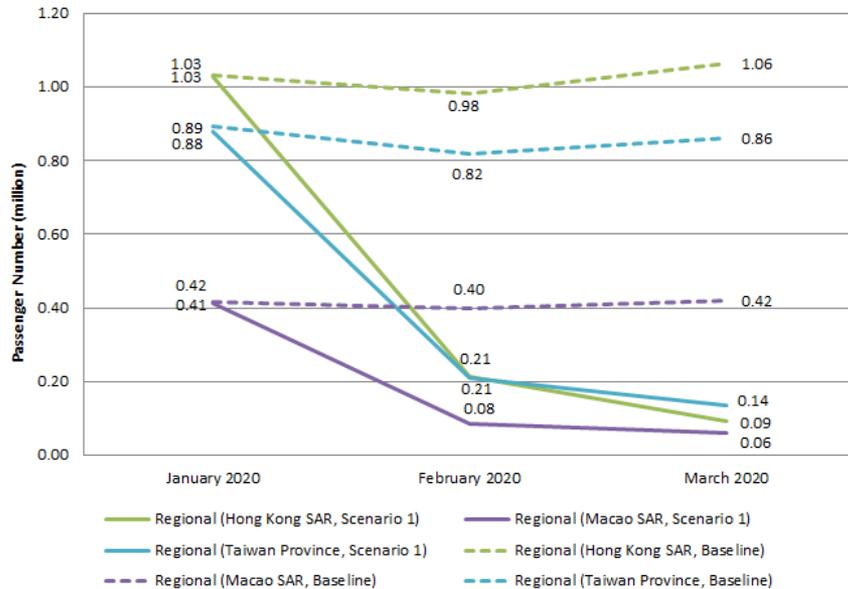
Scenario 2

19.0 million passenger reduction

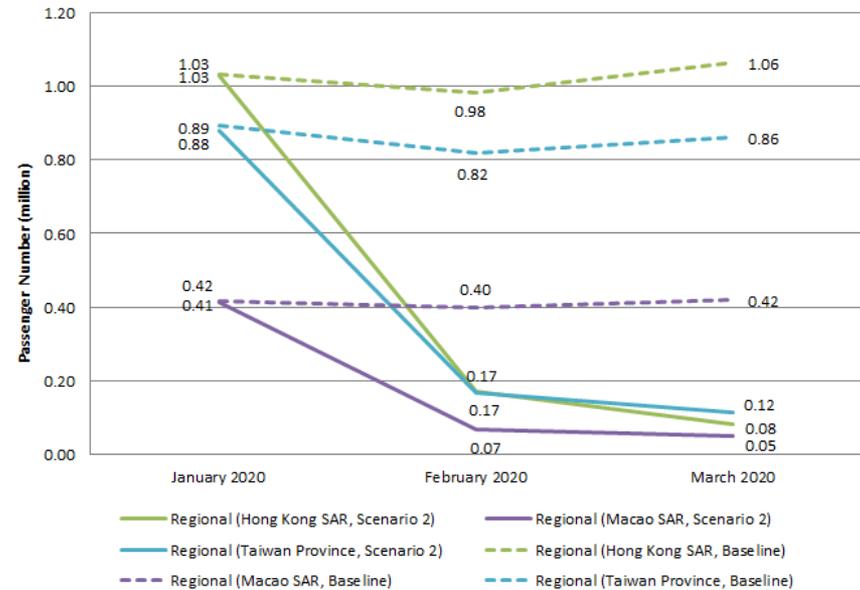


3.8 to 3.9 million “regional” passenger reduction in 1Q 2020 compared to Baseline

Scenario 1
3.8 million passenger reduction



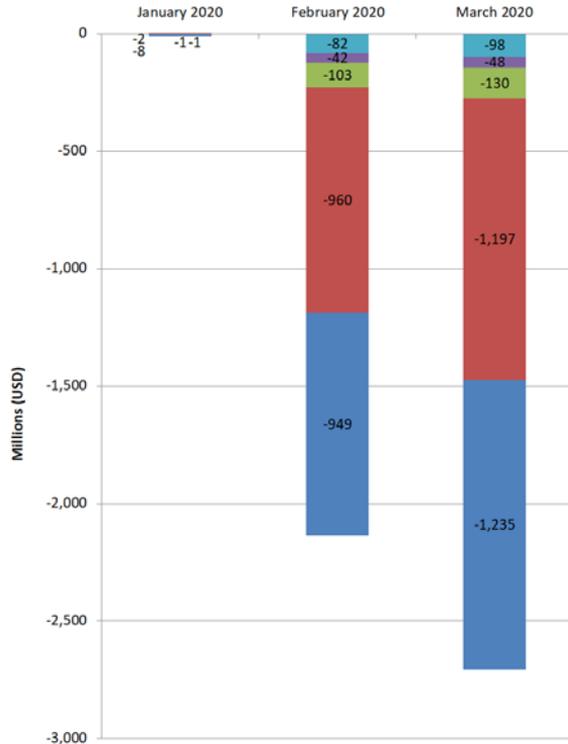
Scenario 2
3.9 million passenger reduction



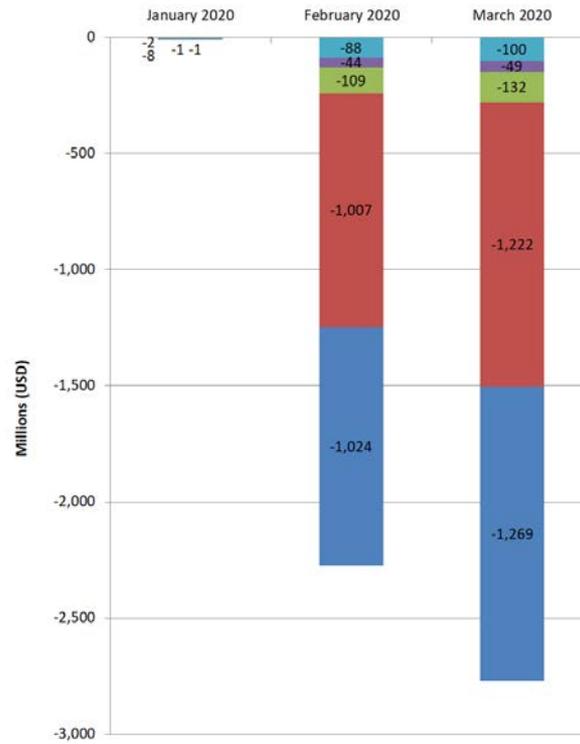


Approx. USD 4.9 to 5.1 billion potential loss of airline revenues for 1Q 2020 compared to Baseline

Scenario 1: USD 4.9 billion reduction



Scenario 2: USD 5.1 billion reduction



- International (Chinese carriers)
- International (Foreign carriers)
- Regional (Mainland - Hong Kong SAR)
- Regional (Mainland - Macao SAR)
- Regional (Mainland - Taiwan Province)

- International: calculated with an average fare of USD 250 per passenger based on traffic/financial reports of CA, CZ and MU with wide variations by destination (20% lower for LCCs);
- Regional: calculated with an average fare of USD 135 per passenger based on traffic/financial reports of CA, CZ and MU (20% lower for LCCs)



The preliminary estimates indicate the impact in terms of scheduled international passenger traffic from/to mainland China (including between mainland China and Hong Kong SAR of China, Macao SAR of China and Taiwan, Province of China) during 1Q 2020 compared to originally-planned:

- Overall reduction of **47% of seats offered by airlines**
- Overall reduction of **21.9 to 22.9 million passengers**
- Approx. **USD 4.9 to 5.1 billion potential loss** of gross operating revenues of airlines

Scope of analysis	Estimated Impact on									
	Number of seats offered by airlines (000)				Number of passengers (000)				Gross operating revenues of airlines (USD, million)	
	Scenario 1		Scenario 2		Scenario 1		Scenario 2		Scenario 1	Scenario 2
International from/to mainland China (Chinese carriers)	-11,700	-45%	-11,700	-45%	-9,900	-48%	-10,500	-51%	-\$2,190	-\$2,300
International from/to mainland China (Foreign carriers)	-9,400	-49%	-9,400	-49%	-8,200	-51%	-8,600	-53%	-\$2,150	-\$2,230
Regional between mainland China and Hong Kong SAR of China	-2,000	-51%	-2,000	-51%	-1,700	-57%	-1,800	-58%	-\$230	-\$240
Regional between mainland China and Macao SAR of China	-800	-49%	-800	-49%	-700	-55%	-700	-57%	-\$90	-\$90
Regional between mainland China and Taiwan, Province of China	-1,500	-45%	-1,500	-45%	-1,400	-52%	-1,400	-55%	-\$180	-\$190
Total	-25,300	-47%	-25,300	-47%	-21,900	-50%	-22,900	-53%	-\$4,850	-\$5,050



Scenario Analysis: Hong Kong SAR of China, Macao SAR of China and Taiwan, Province of China

This is a preliminary analysis. Figures and estimates herein will be updated with the situation evolving and more information available.



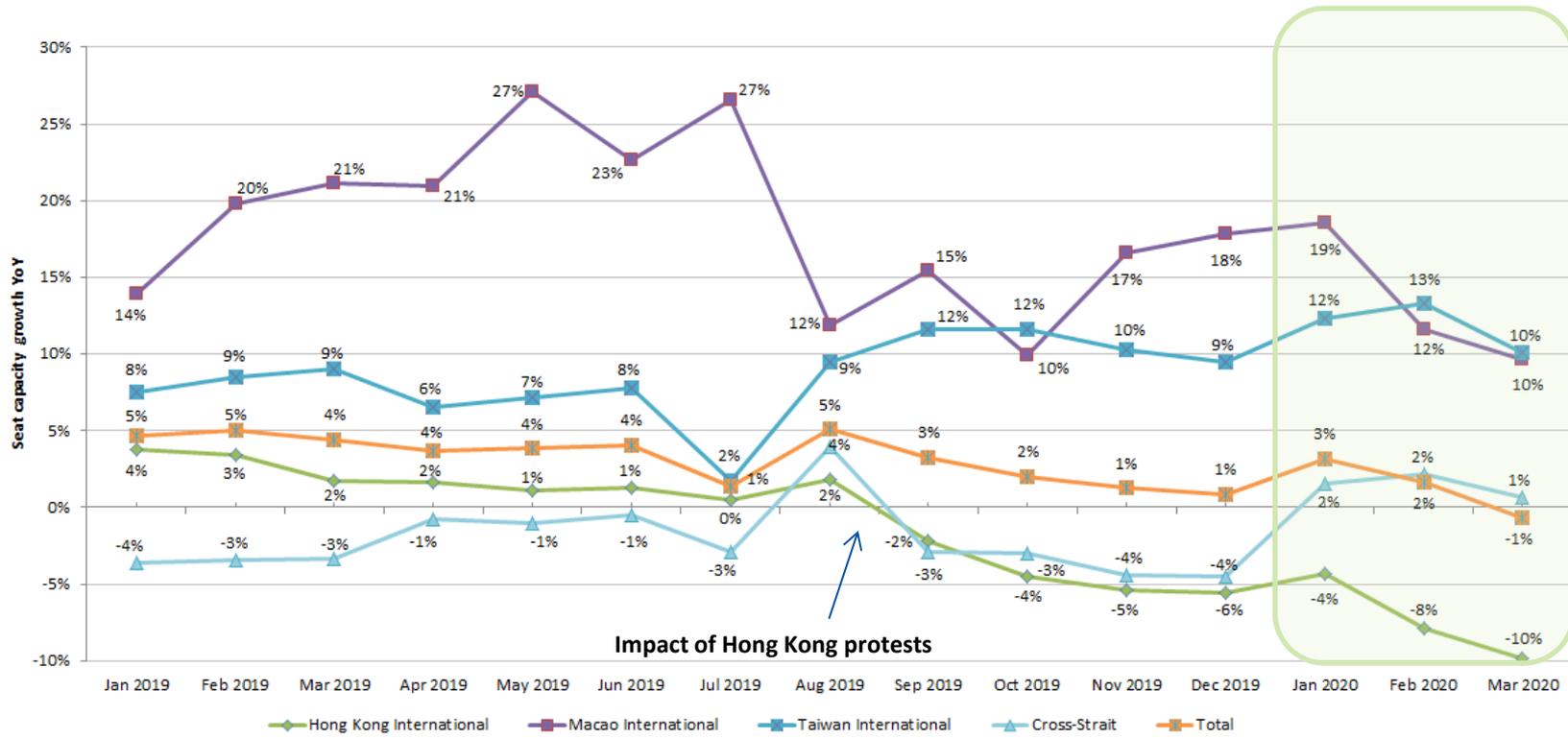
- **“Hong Kong International”** refers to scheduled international passenger services from/to Hong Kong Special Administrative Region (SAR) of China excluding:
 - scheduled passenger services between Hong Kong SAR of China and mainland China, Macao SAR of China and Taiwan, Province of China
- **“Macao International”** refers to scheduled international passenger services from/to Macao SAR of China excluding:
 - scheduled passenger services between Macao SAR of China and mainland China, Hong Kong SAR of China and Taiwan, Province of China
- **“Taiwan International”** refers to scheduled international passenger services from/to Taiwan, Province of China excluding:
 - scheduled passenger services between Taiwan, Province of China and mainland China, Hong Kong SAR of China and Macao SAR of China
- **“Cross-Strait”** refers to scheduled passenger services among Hong Kong SAR of China, Macao SAR of China and Taiwan, Province of China excluding:
 - **“Regional”** already included in the mainland China analysis



- **Baseline (hypothetical situation without COVID-19 outbreak)**
 - Seat capacity: used "originally-planned" winter schedule
 - Load factor: applied 80% (87% for LCCs)
- **Scenario 1 (mild)**
 - Seat capacity: estimated by airlines' schedule changes
 - Load factor: applied the same % as baseline in January; 15 and 12 percentage points lower than baseline in February and March, respectively (8 and 6 percentage points lower for Taiwan; 30 and 25 percentage points lower for Cross-strait; 15 percentage points lower in March for Korea and Italy)
- **Scenario 2 (severe)**
 - Seat capacity: estimated by airlines' schedule changes
 - Load factor: applied the same % as baseline in January; 25 and 22 percentage points lower than baseline in February and March, respectively (13 and 11 percentage points lower for Taiwan; 40 and 33 percentage points lower for Cross-strait; 25 percentage points lower in March for Korea, Iran and Italy)



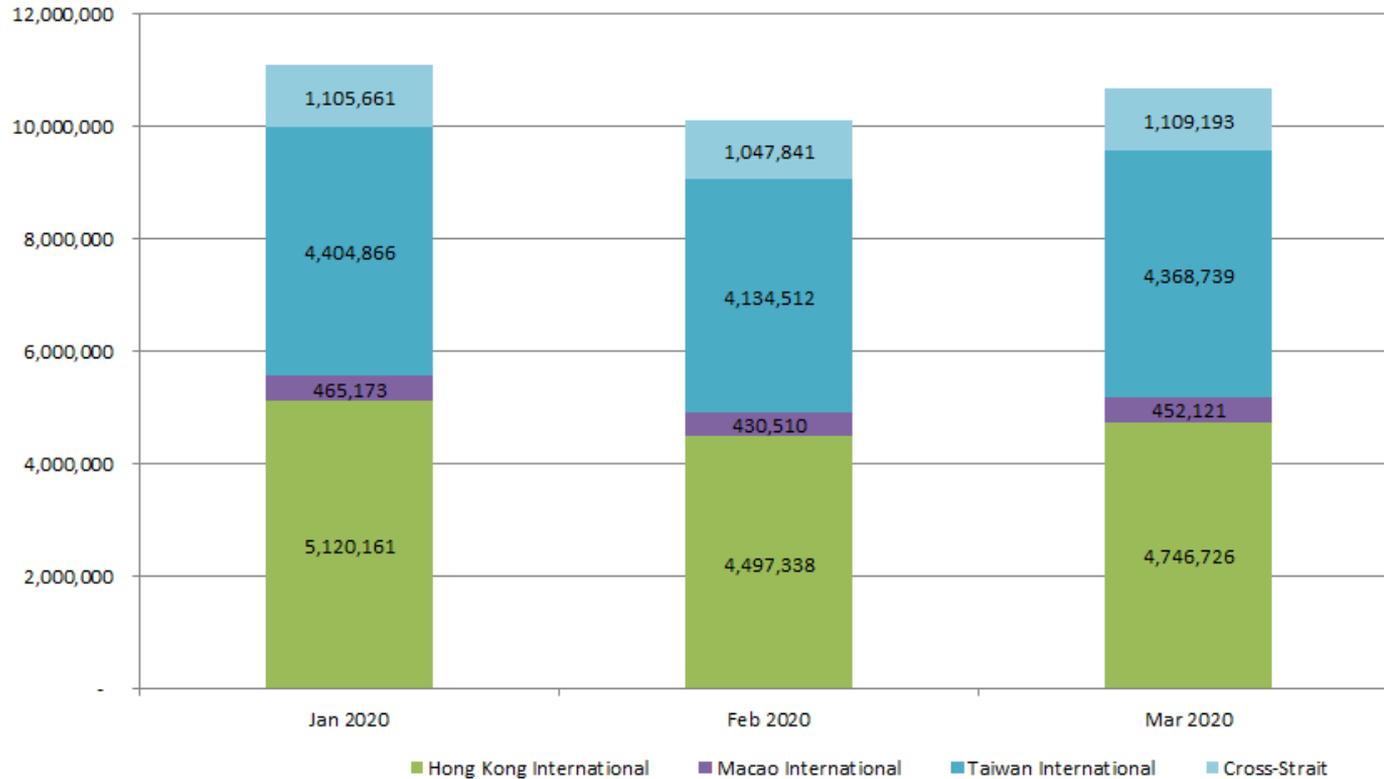
1% seat capacity increase compared to 1Q 2019



A total of YoY 1% seat capacity increase originally - planned for 1Q 2020 with the expectation of continued weak demand for Hong Kong SAR and Cross-strait services



Number of seats offered by airlines (1Q 2020 originally-planned)



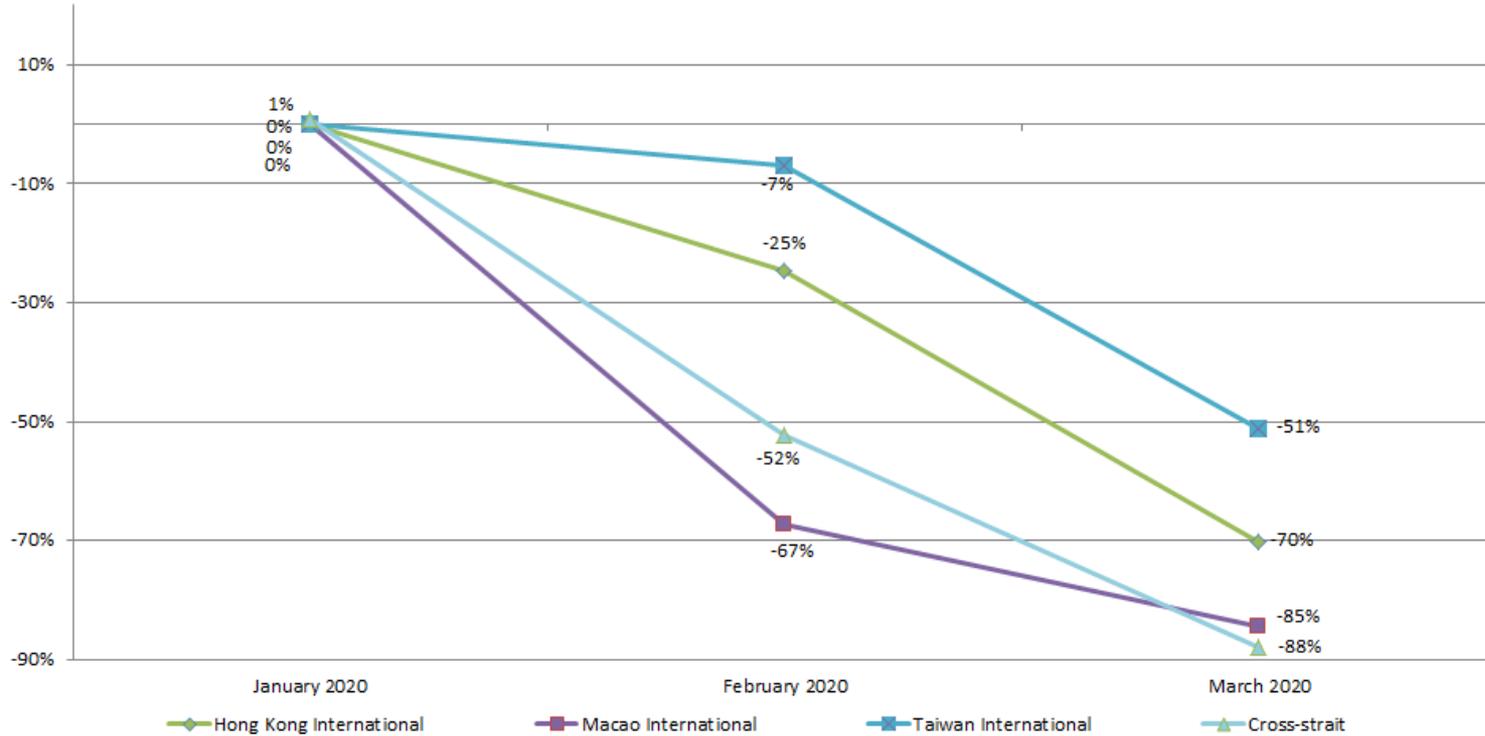
Capacity share 1Q 2020

- 45%: Hong Kong International
- 4%: Macao International
- 41%: Taiwan International
- 10%: Cross-Strait

Airlines originally planned to further reduce seat capacity in Hong Kong SAR due to the impact of Hong Kong protests and the continued trade tension.



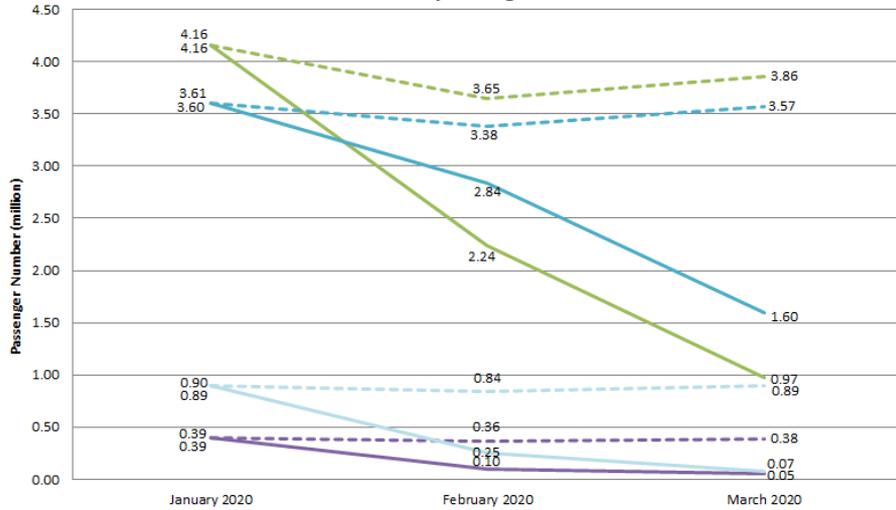
Scenarios 1 & 2: 29% seat capacity reduction from Baseline





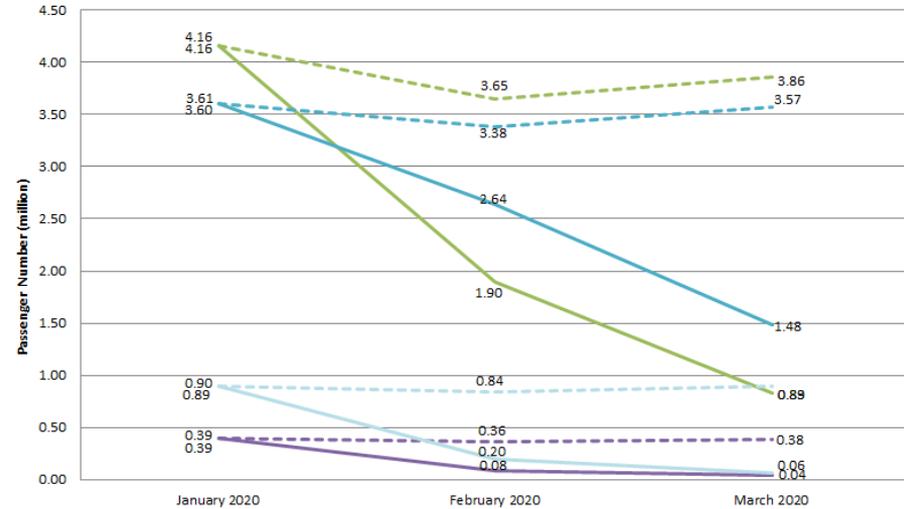
8.8 to 9.7 million passenger reduction in 1Q 2020 compared to Baseline

Scenario 1
8.8 million passenger reduction



- International (Hong Kong SAR, Scenario 1)
- International (Macao SAR, Scenario 1)
- International (Taiwan Province, Scenario 1)
- Cross-strait (Scenario 1)
- - - International (Hong Kong SAR, Baseline)
- - - International (Macao SAR, Baseline)
- - - International (Taiwan Province, Baseline)
- - - Cross-strait (Baseline)

Scenario 2
9.7 million passenger reduction

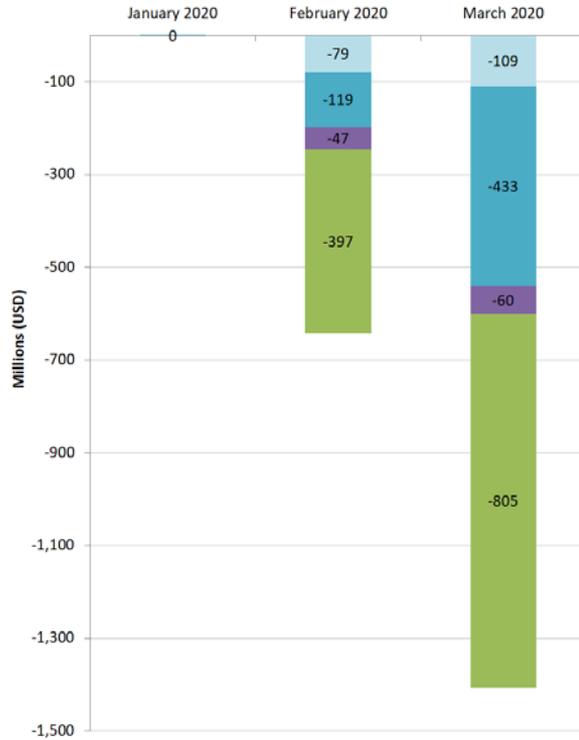


- International (Hong Kong SAR, Scenario 2)
- International (Macao SAR, Scenario 2)
- International (Taiwan Province, Scenario 2)
- Cross-strait (Scenario 1)
- - - International (Hong Kong SAR, Baseline)
- - - International (Macao SAR, Baseline)
- - - International (Taiwan Province, Baseline)
- - - Cross-strait (Baseline)

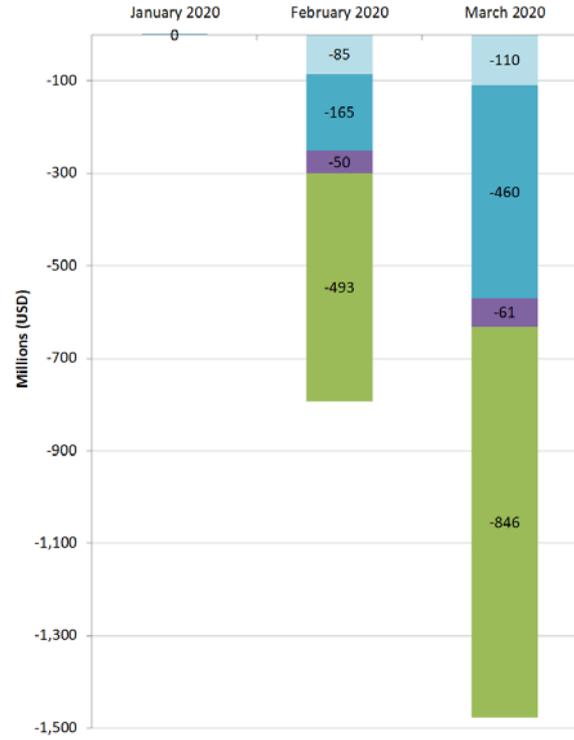


Approx. USD 2.1 to 2.3 billion potential loss of airline revenues for 1Q 2020 compared to Baseline

Scenario 1: USD 2.1 billion reduction



Scenario 2: USD 2.3 billion reduction



- International (Hong Kong SAR)
- International (Macao SAR)
- International (Taiwan Province)
- Cross-strait

- Hong Kong International: calculated with an average fare of USD 287.6 per passenger with wide variations by destination (20% lower for LCCs);
- Macao International: calculated with an average fare of USD 172 per passenger (ditto);
- Cross-Strait: calculated with an average fare of USD 135 per passenger (ditto)



The preliminary estimates indicate the impact in terms of scheduled international passenger traffic from/to Hong Kong SAR of China, Macao SAR of China and Taiwan, Province of China, as well as scheduled passenger traffic among Hong Kong SAR of China, Macao SAR of China and Taiwan, Province of China, during 1Q 2020 compared to originally-planned:

- Overall reduction of **29% of seats offered by airlines**
- Overall reduction of **8.8 to 9.7 million passengers**
- Approx. **USD 2.1 to 2.3 billion potential loss** of gross operating revenues of airlines

Scope of analysis	Estimated Impact on									
	Number of seats offered by airlines (000)				Number of passengers (000)				Gross operating revenues of airlines (USD, million)	
	Scenario 1		Scenario 2		Scenario 1		Scenario 2		Scenario 1	Scenario 2
Hong Kong International	-4,400	-31%	-4,400	-31%	-4,300	-37%	-4,800	-41%	-\$1,200	-\$1,340
Macao International	-700	-50%	-700	-50%	-600	-53%	-600	-54%	-\$110	-\$110
Taiwan International	-2,500	-20%	-2,500	-20%	-2,500	-24%	-2,800	-27%	-\$550	-\$620
Cross-Strait	-1,500	-46%	-1,500	-46%	-1,400	-53%	-1,500	-56%	-\$190	-\$190
Total	-9,200	-29%	-9,200	-29%	-8,800	-34%	-9,700	-37%	-\$2,050	-\$2,270



Summary of Scenario Analysis: China + Additional Estimates

This is a preliminary analysis. Figures and estimates herein will be updated with the situation evolving and more information available.



- The direct impact of COVID-19 outbreak is expected to be greater than that caused by SARS in 2003 due to higher scale of flight cancellations and bigger economic size/air travel market of China
- The preliminary estimates indicate the impact in terms of scheduled international passenger traffic from/to China (including Hong Kong SAR of China, Macao SAR of China, Taiwan, Province of China, and cross-strait services) during 1Q 2020 compared to originally-planned:
 - Overall reduction of **40% of seats offered by airlines**
 - Overall reduction of **30.8 to 32.6 million passengers**
 - Approx. **USD 6.9 to 7.3 billion potential loss** of gross operating revenues of airlines
- The above estimates exclude, inter alia, the impact of traffic reduction related to air cargo, Chinese domestic, as well as other international services



Scope of analysis	Estimated Impact on									
	Number of seats offered by airlines (000)				Number of passengers (000)				Gross operating revenues of airlines (USD, million)	
	Scenario 1		Scenario 2		Scenario 1		Scenario 2		Scenario 1	Scenario 2
International from/to mainland China (Chinese carriers)	-11,700	-45%	-11,700	-45%	-9,900	-48%	-10,500	-51%	-\$2,190	-\$2,300
International from/to mainland China (Foreign carriers)	-9,400	-49%	-9,400	-49%	-8,200	-51%	-8,600	-53%	-\$2,150	-\$2,230
Regional between mainland China and Hong Kong SAR of China	-2,000	-51%	-2,000	-51%	-1,700	-57%	-1,800	-58%	-\$230	-\$240
Regional between mainland China and Macao SAR of China	-800	-49%	-800	-49%	-700	-55%	-700	-57%	-\$90	-\$90
Regional between mainland China and Taiwan, Province of China	-1,500	-45%	-1,500	-45%	-1,400	-52%	-1,400	-55%	-\$180	-\$190
Sub-total	-25,300	-47%	-25,300	-47%	-21,900	-50%	-22,900	-53%	-\$4,850	-\$5,050
Hong Kong International	-4,400	-31%	-4,400	-31%	-4,300	-37%	-4,800	-41%	-\$1,200	-\$1,340
Macao International	-700	-50%	-700	-50%	-600	-53%	-600	-54%	-\$110	-\$110
Taiwan International	-2,500	-20%	-2,500	-20%	-2,500	-24%	-2,800	-27%	-\$550	-\$620
Cross-Strait	-1,500	-46%	-1,500	-46%	-1,400	-53%	-1,500	-56%	-\$190	-\$190
Sub-total	-9,200	-29%	-9,200	-29%	-8,800	-34%	-9,700	-37%	-\$2,050	-\$2,270
Grand total	-34,500	-40%	-34,500	-40%	-30,800	-44%	-32,600	-47%	-\$6,900	-\$7,320



Domestic passenger services in mainland China in 1Q 2020

The preliminary estimates indicate the impact in terms of scheduled domestic passenger traffic within mainland China during 1Q 2020 compared to originally-planned:

- Overall reduction of **40% of seats offered by airlines**
- Overall reduction of **66.6 to 75.8 million passengers**
- Approx. **USD 6.7 to 7.6 billion potential loss** of gross operating revenues of airlines

Scope of analysis	Estimated Impact on									
	Number of seats offered by airlines (000)		Number of passengers (000)		Gross operating revenues of airlines (USD, million)					
	Scenario 1	Scenario 2	Scenario 1	Scenario 2	Scenario 1	Scenario 2				
Domestic within mainland China	-76,100	-40%	-76,100	-40%	-66,600	-42%	-75,800	-48%	-\$6,460	-\$7,774
Assumption	Seat capacity is reduced by 3% in January 2020 and 60% in February and March 2020 from the originally-planned schedules (baseline)		Load factor is down from 83% (baseline) to 80% for 1Q 2020		Load factor is down from 83% (baseline) to 80% in January 2020, 58% in February 2020 and 65% in March 2020		Calculated with an average fare of USD 97 per passenger based on CANNNews.com.cn estimates		Calculated with an average fare of USD 102.5 per passenger based on traffic/financial reports of CA, CZ and MU	

PRELIMINARY



Potential loss of revenues from Chinese tourists to top 5 States in 1Q 2020

Top 5 States that Chinese traveller had the largest share		Baseline		Scenario 1		Scenario 2	
		Passenger number	Tourism revenue (in million USD)*	Passenger number	Tourism revenue (in million USD)*	Passenger number	Tourism revenue (in million USD)*
Australia		460,161	446.36	340,318	330.11	296,616	287.72
	Loss	-	-	-119,843	-116.25	-163,545	-158.64
France		240,523	233.31	137,867	133.73	120,670	117.05
	Loss	-	-	-102,656	-99.58	-119,853	-116.26
Japan		3,181,840	3,086.38	2,167,273	2102.25	1,855,034	1,799.38
	Loss	-	-	-1,014,567	-984.13	-1,326,806	-1287.00
Thailand		2,772,352	2,689.18	1,826,629	1771.83	1,589,458	1,541.77
	Loss	-	-	-945,723	-917.35	-1,182,894	-1147.41
United States		888,102	861.46	505,096	489.94	446,707	433.31
	Loss	-	-	-383,006	-371.52	-441,395	-428.15

- Data excludes Special Administrative Regions (SAR) of China (Hong Kong SAR and Macao SAR) and Taiwan, Province of China
- Calculated with average international tourism spending of China (USD 970) per tourist reported by UNWTO



Scenario Analysis: Republic of Korea

This is a preliminary analysis. Figures and estimates herein will be updated with the situation evolving and more information available.

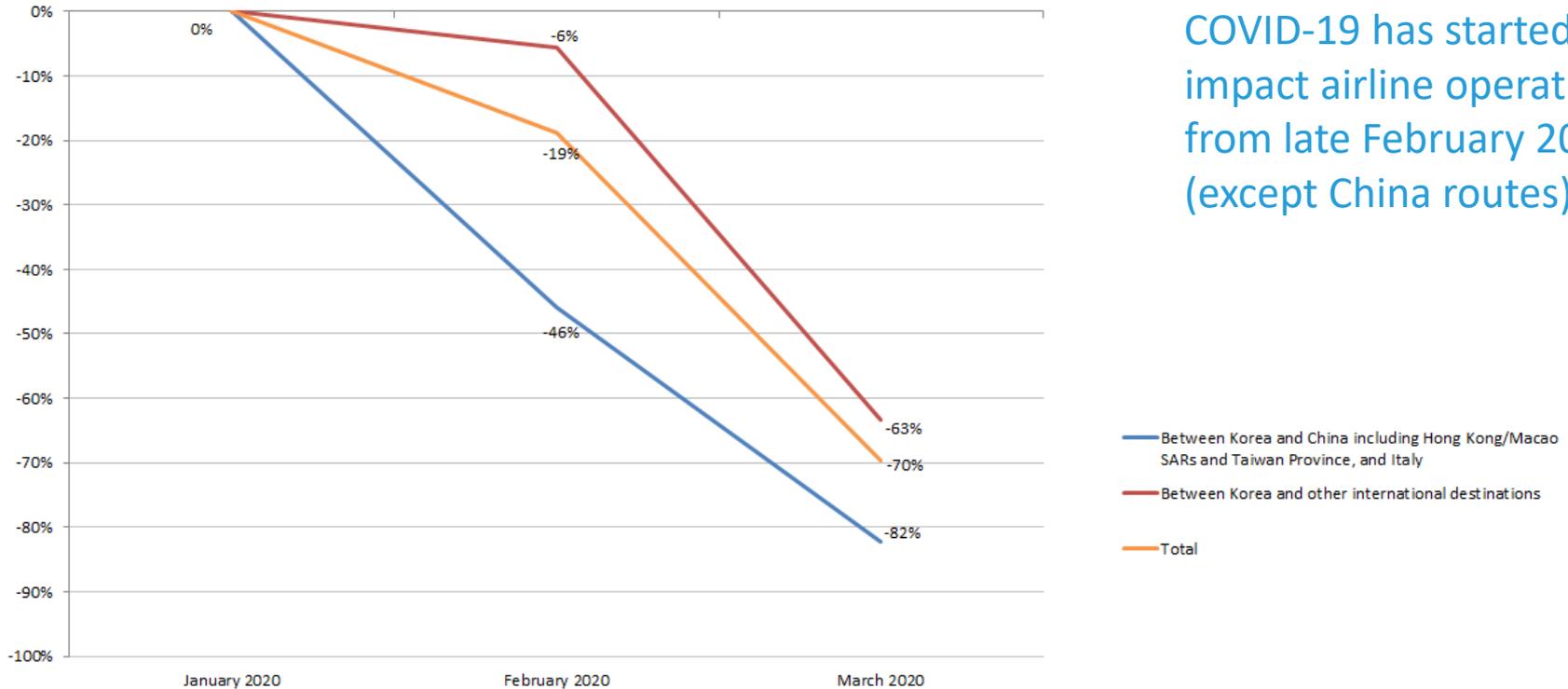


- Scope: scheduled international passenger services from/to Republic of Korea
- Baseline (hypothetical situation without COVID-19 outbreak)*
 - Seat capacity: used "originally-planned" winter schedule
 - Load factor: applied 80% (78% for Chinese carriers, 87% for LCCs)
- Scenario 1 (mild)*
 - Seat capacity: estimated by airlines' schedule changes
 - Load factor: applied the same % as baseline in January; 8 and 15 percentage points lower than baseline in February and March, respectively (15 and 20 percentage points lower for China and Hong Kong/Macao SARs)
- Scenario 2 (severe)*
 - Seat capacity: estimated by airlines' schedule changes
 - Load factor: applied the same % as baseline in January; 13 and 25 percentage points lower than baseline in February and March, respectively (25 percentage points lower in February for China and Hong Kong/Macao SARs)

* Between Republic of Korea and China, Hong Kong/Macao SARs of China, as well as Taiwan, Province of China: extracted the impacts involving Korea from the respective scenarios of China, Hong Kong/Macao SARs and Taiwan Province



29% seat capacity reduction in 1Q 2020 from Baseline

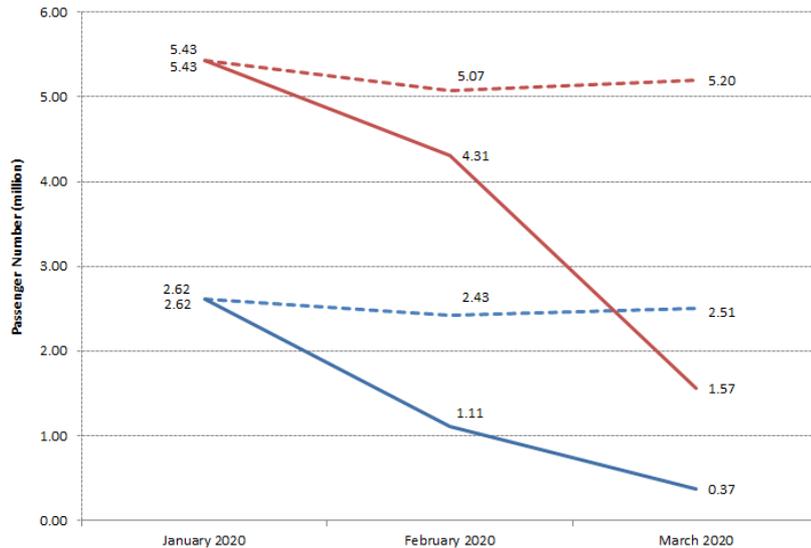


COVID-19 has started to impact airline operations from late February 2020 (except China routes)



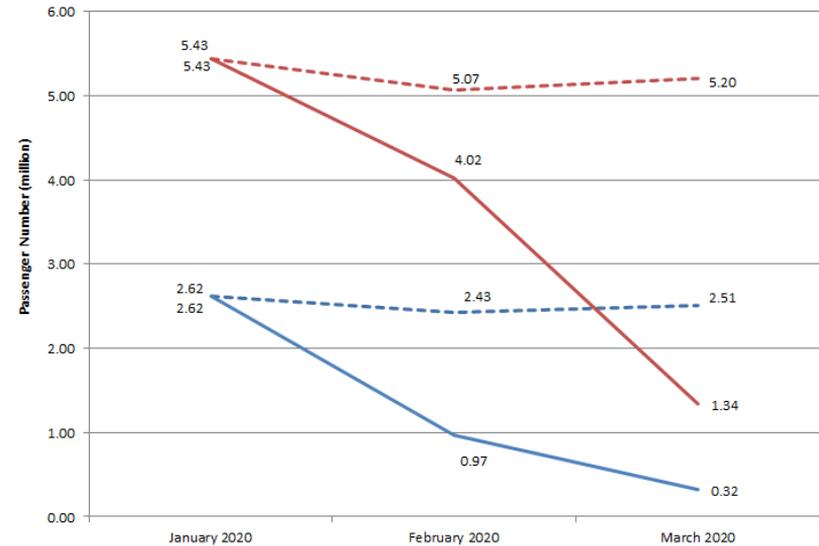
7.8 to 8.6 million passenger reduction in 1Q 2020 compared to Baseline

Scenario 1 7.8 million passenger reduction



- Between Korea and China including Hong Kong/Macao SARs and Taiwan Province, and Italy (Baseline)
- (Scenario 1)
- Between Korea and other international destinations (Baseline)
- (Scenario 1)

Scenario 2 8.6 million passenger reduction

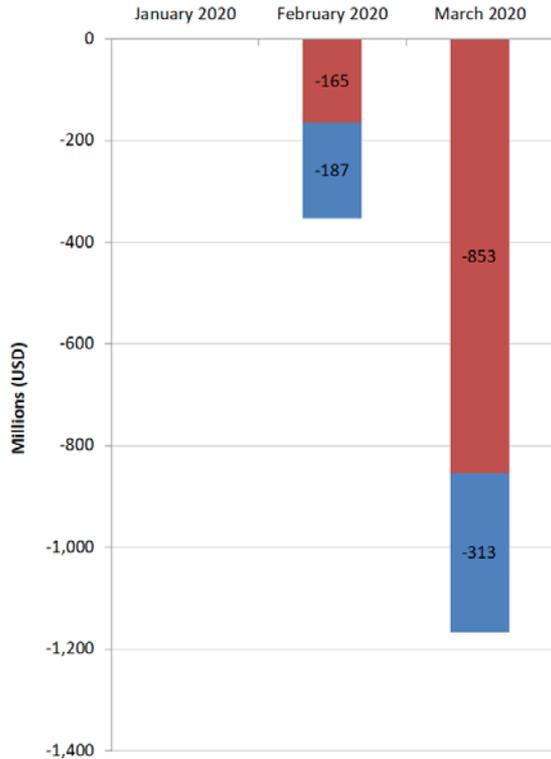


- Between Korea and China including Hong Kong/Macao SARs and Taiwan Province, and Italy (Baseline)
- (Scenario 2)
- Between Korea and other international destinations (Baseline)
- (Scenario 2)

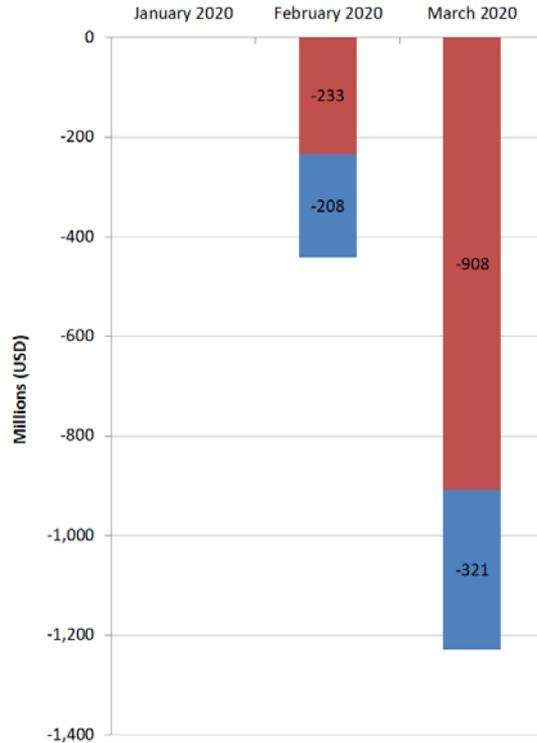


Approx. USD 1.5 to 1.7 billion potential loss of airline revenues for 1Q 2020 compared to Baseline

Scenario 1: USD 1.5 billion reduction



Scenario 2: USD 1.7 billion reduction



- Between Korea and China including Hong Kong/Macao SARs and Taiwan Province, and Italy
- Between Korea and other international destinations

- Between Korea and China, Hong Kong/Macao SARs, as well as Taiwan Province: extracted the impact involving Korea from scenarios 1 and 2 of China etc.;
- Other internal destinations: calculated with an average fare ranging from USD 155 to 485 by destination (20% lower for LCCs)



Scenario Analysis: Italy

This is a preliminary analysis. Figures and estimates herein will be updated with the situation evolving and more information available.

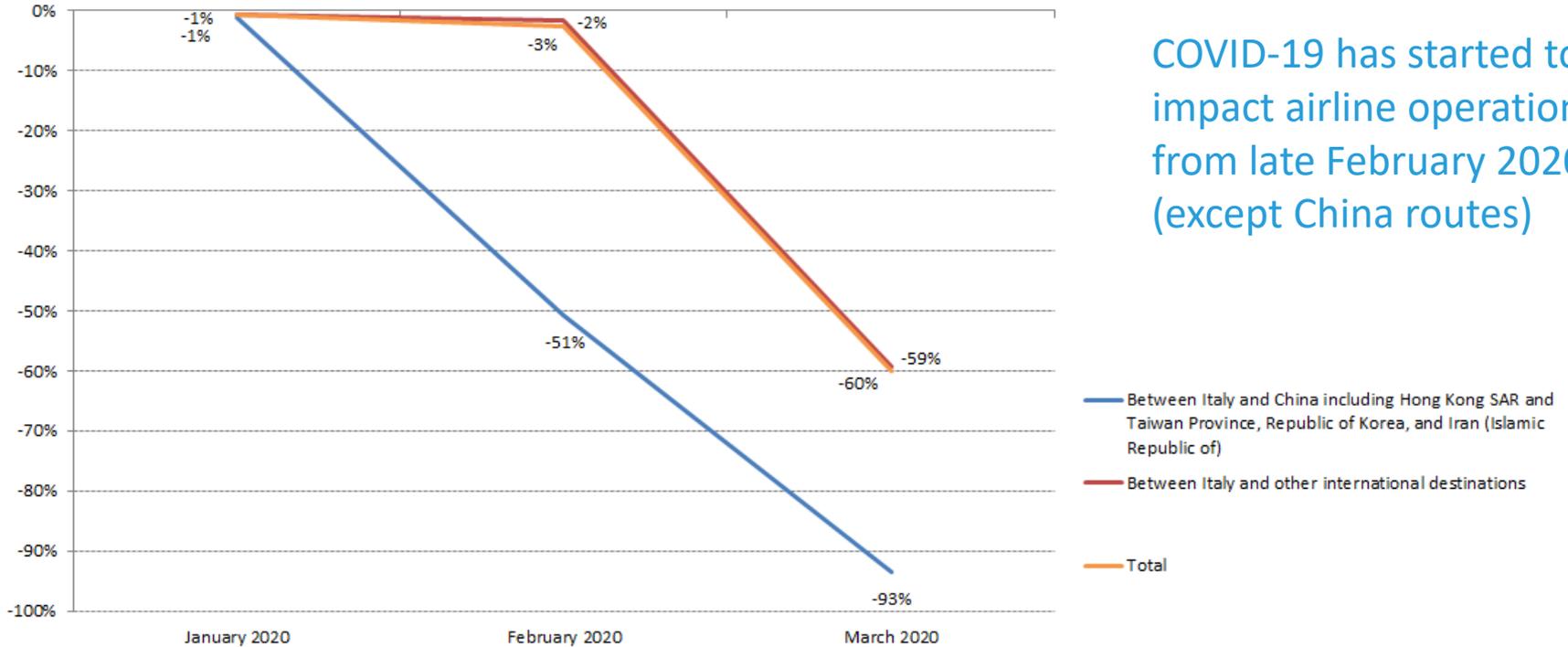


- Scope: scheduled international passenger services from/to Republic of Korea
- Baseline (hypothetical situation without COVID-19 outbreak)*
 - Seat capacity: used "originally-planned" winter schedule
 - Load factor: applied 80% (78% for Chinese carriers, 87% for LCCs)
- Scenario 1 (mild)*
 - Seat capacity: estimated by airlines' schedule changes
 - Load factor: applied the same % as baseline in January and February (15 and 8 percentage points lower than baseline in February for China/Hong Kong SAR and Korea/Iran, respectively); 15 percentage points lower than baseline in March
- Scenario 2 (severe)*
 - Seat capacity: estimated by airlines' schedule changes
 - Load factor: applied the same % as baseline in January and February (25 and 13 percentage points lower than baseline in February for China/Hong Kong SAR and Korea/Iran, respectively); 25 percentage points lower than baseline in March

* Between Italy and China, Hong Kong SARs of China, Taiwan, Province of China, as well as Republic of Korea: extracted the impacts involving Italy from the respective scenarios of China, Hong Kong SARs, Taiwan Province and Korea

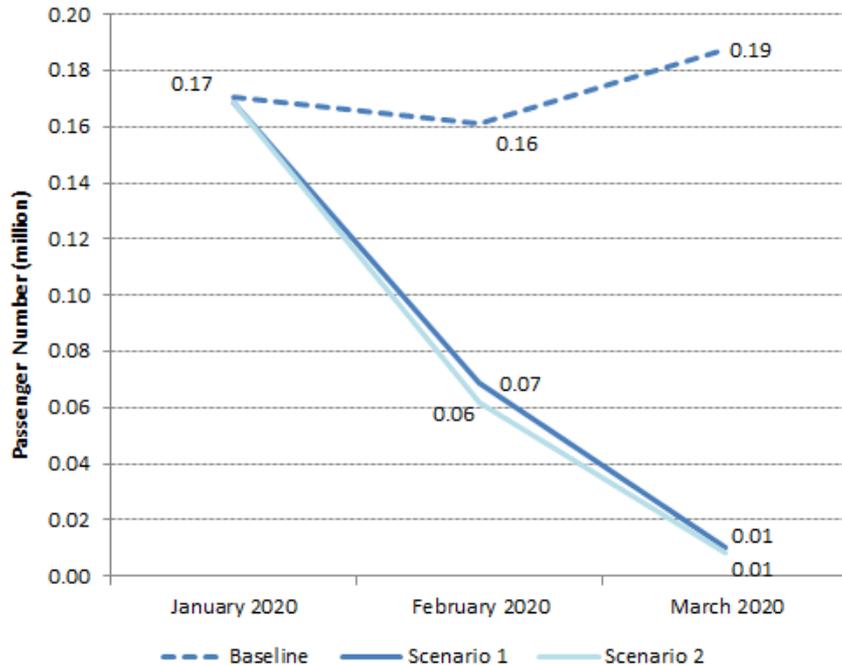


23% seat capacity reduction in 1Q 2020 from Baseline

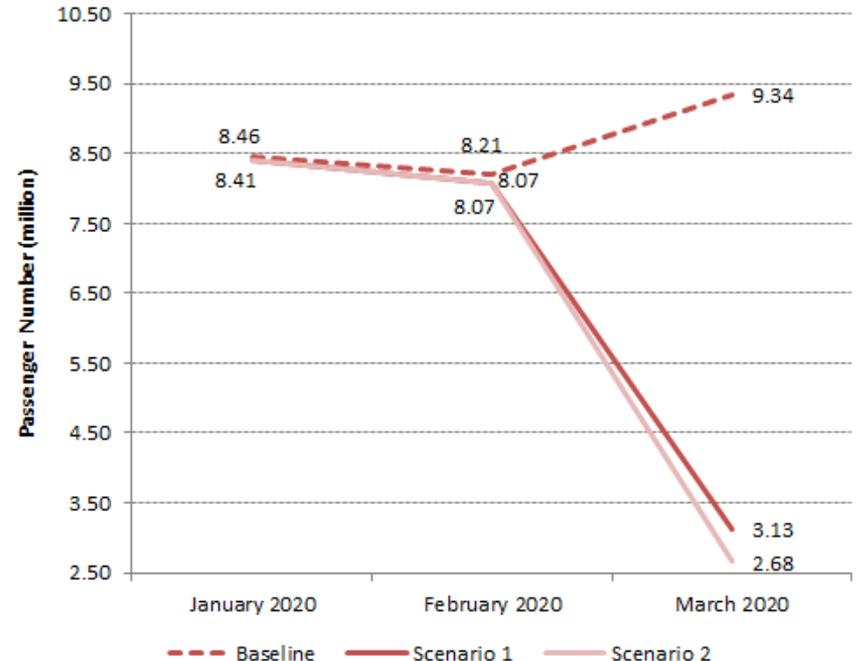


COVID-19 has started to impact airline operations from late February 2020 (except China routes)

6.7 to 7.1 million passenger reduction in 1Q 2020 compared to Baseline



Between Italy and China including Hong Kong SAR, Republic of Korea, and Iran (Islamic Republic of)

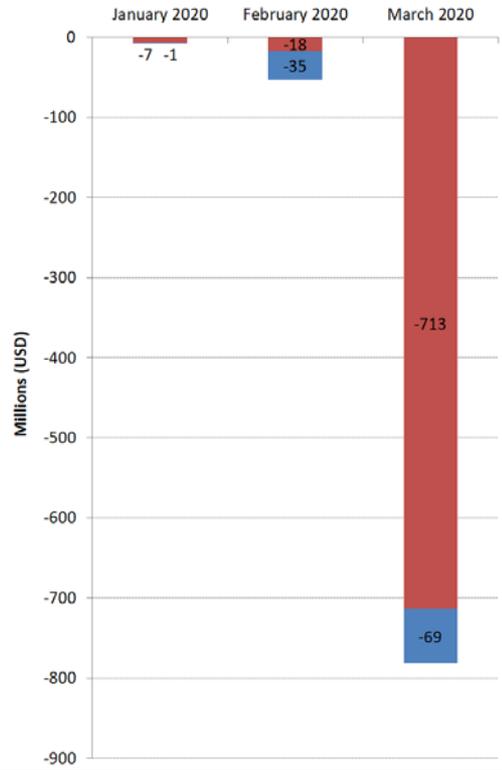


Between Italy and other international destinations

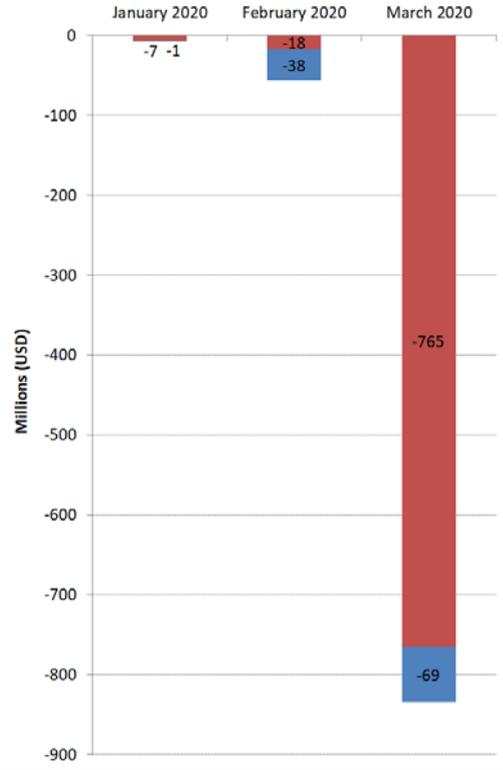


Approx. USD 0.8 to 0.9 billion potential loss of airline revenues for 1Q 2020 compared to Baseline

Scenario 1: USD 840 million reduction



Scenario 2: USD 900 million reduction



- Between Italy and China including Hong Kong SAR and Taiwan Province, Republic of Korea, and Iran (Islamic Republic of)
- Between Italy and other international destinations

- Between Italy and China, Hong Kong SAR and Macao SAR of China, as well as Republic of Korea: extracted the impacts involving Italy from the respective scenarios of China, Hong Kong/Macao SARs and Korea;
- Other internal destinations: calculated with an average fare ranging from USD 60 to 485 by destination (20% lower for LCCs)



Scenario Analysis: Iran (Islamic Republic of)

This is a preliminary analysis. Figures and estimates herein will be updated with the situation evolving and more information available.

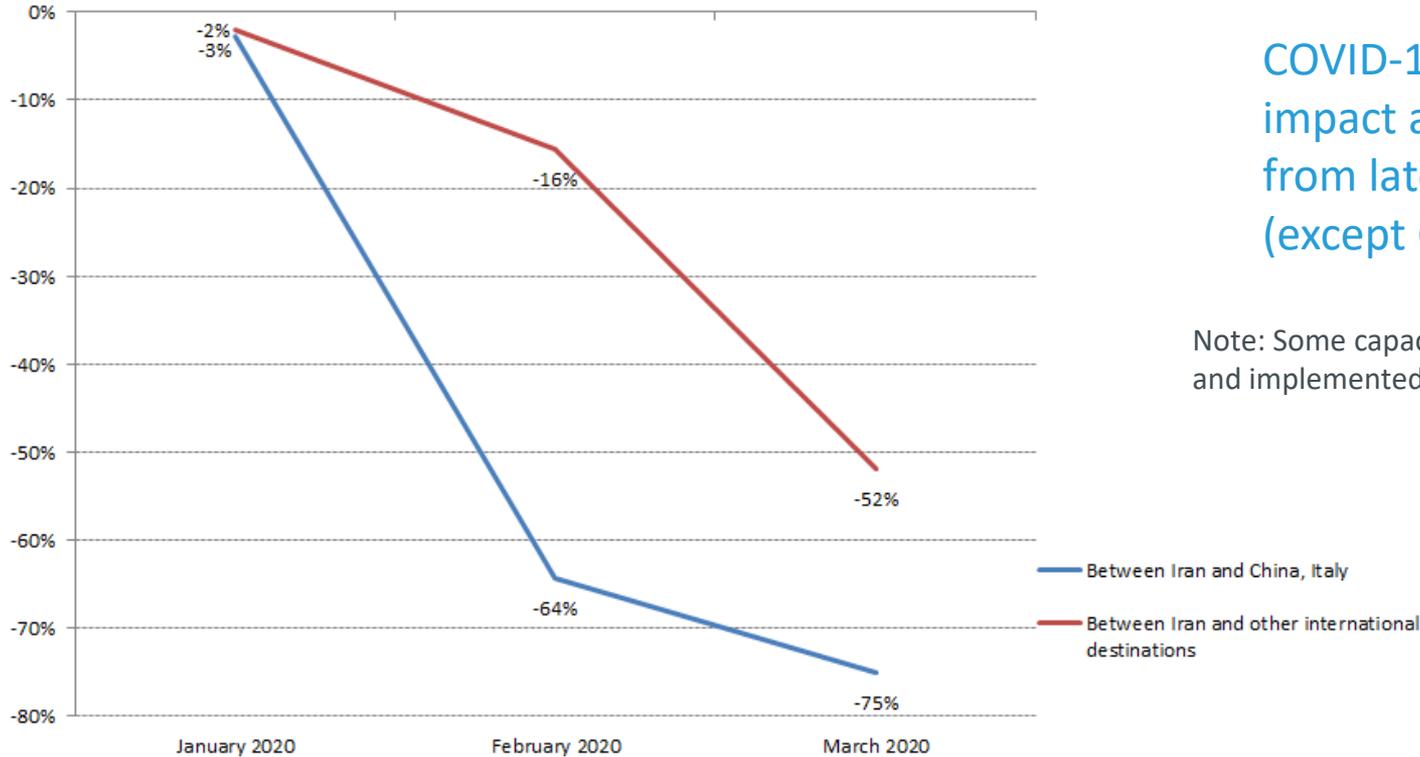


- Scope: scheduled international passenger services from/to Republic of Korea
- Baseline (hypothetical situation without COVID-19 outbreak)*
 - Seat capacity: used "originally-planned" winter schedule
 - Load factor: applied 80% (78% for Chinese carriers, 87% for LCCs)
- Scenario 1 (mild)*
 - Seat capacity: estimated by airlines' schedule changes
 - Load factor: applied the same % as baseline in January and February (15 and 8 percentage points lower than baseline in February for China and Korea, respectively); 15 percentage points lower than baseline in March
- Scenario 2 (severe)*
 - Seat capacity: estimated by airlines' schedule changes
 - Load factor: applied the same % as baseline in January and February (25 and 13 percentage points lower than baseline in February for China and Korea, respectively); 25 percentage points lower than baseline in March

* Between Iran (Islamic Republic of) and China, as well as Italy: extracted the impacts involving Iran from the respective scenarios of China and Italy



25% seat capacity reduction in 1Q 2020 from Baseline

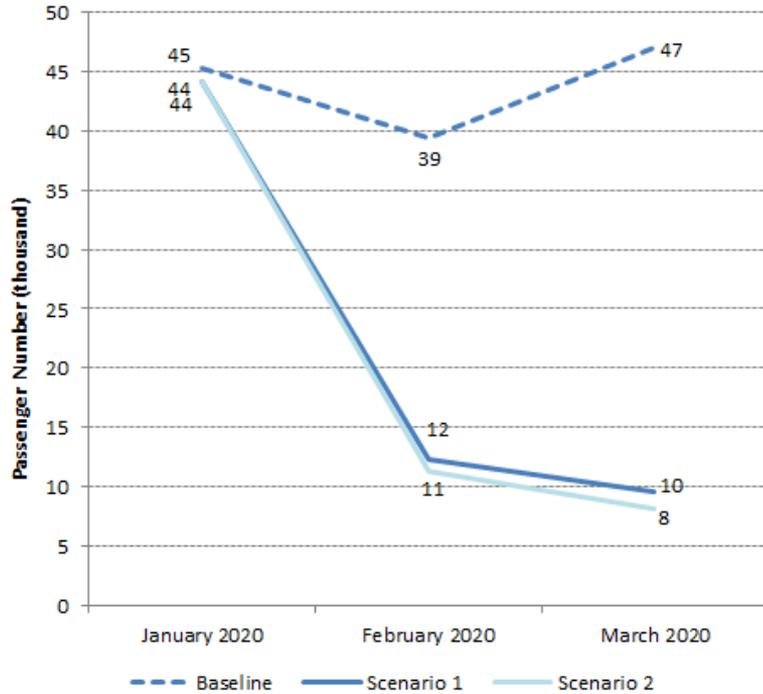


COVID-19 has started to impact airline operations from late February 2020 (except China routes)

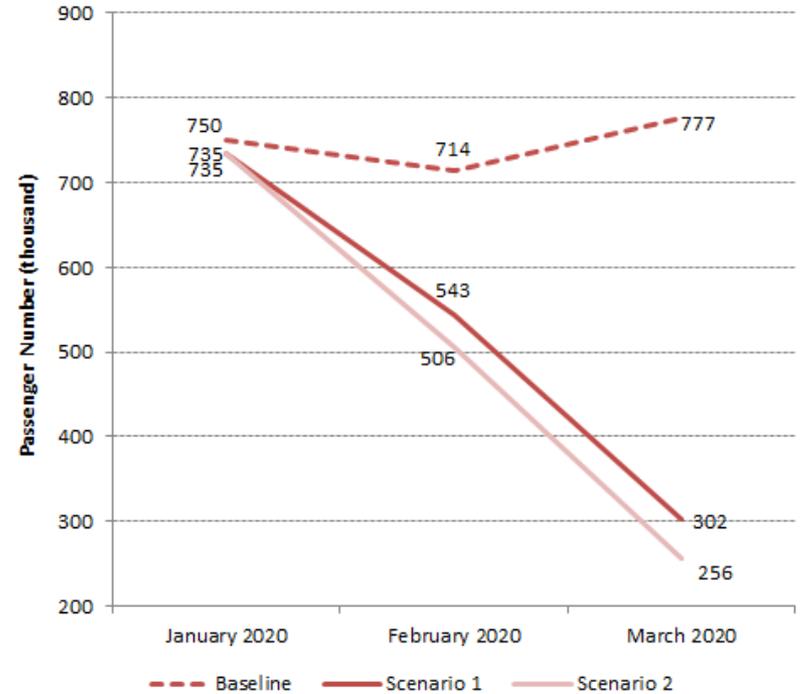
Note: Some capacity change was announced and implemented before COVID-19 outbreak



730,000 to 810,000 passenger reduction in 1Q 2020 compared to Baseline



Between Iran and China, Italy

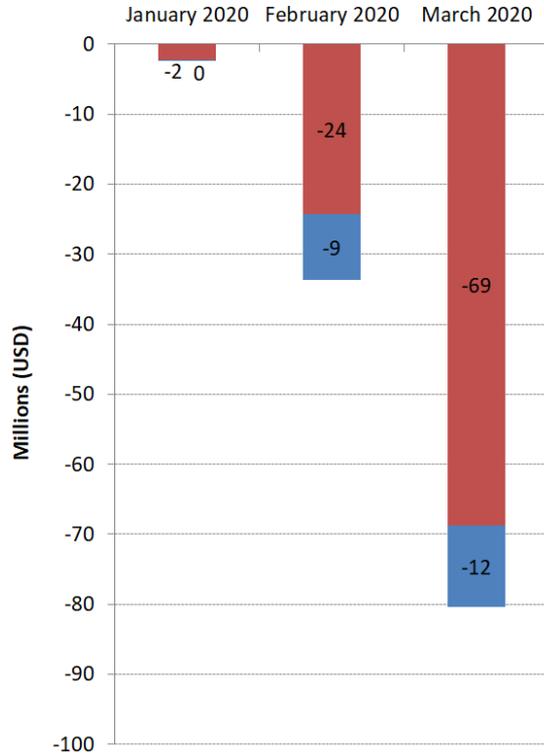


Between Iran and other international destinations

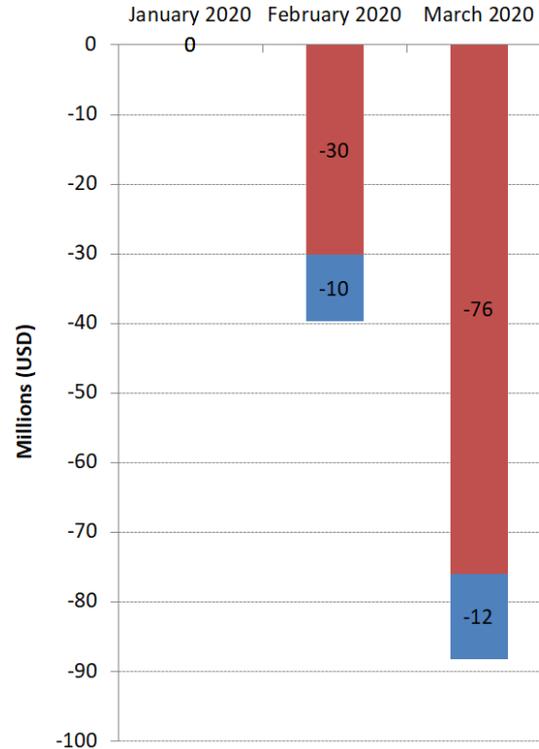


Approx. USD 120 to 130 million potential loss of airline revenues for 1Q 2020 compared to Baseline

Scenario 1: USD 120 million reduction



Scenario 2: USD 130 million reduction



- Between Iran and China, Italy
- Between Iran and other international destinations

- Between Italy and China, Italy: extracted the impacts involving Iran from the respective scenarios of China and Italy;
- Other internal destinations: calculated with an average fare ranging from USD 105 to 370 by destination (20% lower for LCCs)



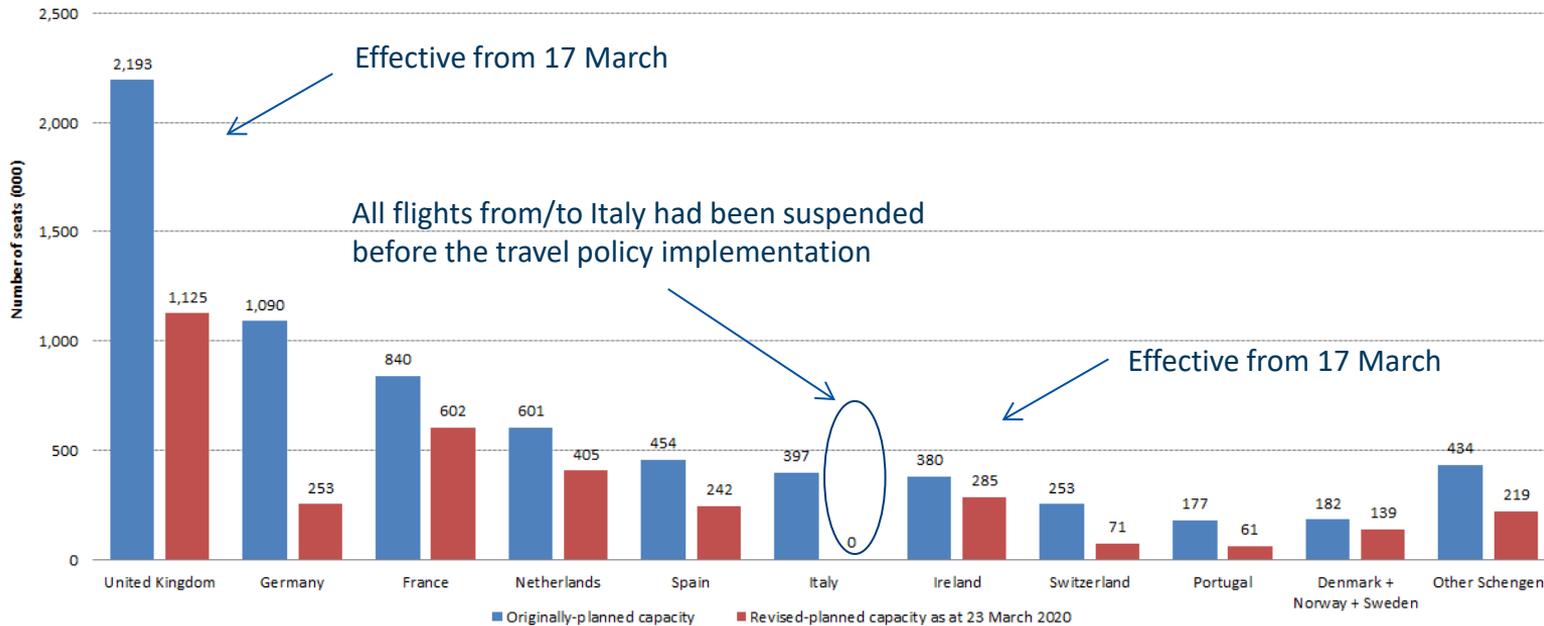
Preliminary Analysis: Transatlantic between United States and Schengen Area + United Kingdom/Ireland

This section contains a very preliminary analysis. Figures and estimates herein will be updated with the situation evolving and more information available.



51% capacity reduction so far since the announcement of U.S. travel policy

International passenger capacity between U.S. and Schengen Area + UK/Ireland
(for 30 days from 14 March with entry restrictions by the U.S. travel policy announced on 10 March 2020)



The U.S. travel policy would affect a maximum of approx. **5.5 million passengers** for one month if all the flights were suspended



North American
Central American
and Caribbean
(NACC) Office
Mexico City

South American
(SAM) Office
Lima

ICAO
Headquarters
Montréal

Western and
Central African
(WACAF) Office
Dakar

European and
North Atlantic
(EUR/NAT) Office
Paris

Middle East
(MID) Office
Cairo

Eastern and
Southern African
(ESAF) Office
Nairobi

Asia and Pacific
(APAC) Sub-office
Beijing

Asia and Pacific
(APAC) Office
Bangkok



THANK YOU

<https://www.icao.int/sustainability/Pages/Economic-Impacts-of-COVID-19.aspx>

<https://www.icao.int/Newsroom/Pages/Economic-impact-estimates-due-to-COVID-19-travel-bans.aspx>

<https://www.icao.int/Security/COVID-19/Pages/default.aspx>

<http://www.capsca.org/CoronaVirusRefs.html>